

Commonwealth of Kentucky
Division for Air Quality
EXECUTIVE SUMMARY

TITLE V (PROPOSED PERMIT) NO. V-05-089

MARATHON PETROLEUM COMPANY, LLC

CATLETTSBURG REFINING, LLC

PO. Box 1492

CATLETTSBURG, KY

DATE: MARCH 20, 2007

SUKHENDU K MAJUMDAR, REVIEWER

SOURCE I.D. #21-019-00004

SOURCE AI #339

ACTIVITY # APE 20040002

SOURCE DESCRIPTION:

Marathon Petroleum Company at the Catlettsburg Refining, LLC (CRLLC) processes petroleum crude oil to produce gasoline, diesel fuel, kerosene, and jet fuel and petroleum derivatives such as petrochemicals and lube oil feed stock. Besides the crude oil processing units, the refinery has boilers, sulfur plants, and waste water treatment. Raw crude, refined petroleum products and intermediates are stored in the storage tanks for distribution and further processing.

The refinery at Catlettsburg uses the Big Sandy River to transport domestic crude oil and product distribution in barges. Besides the river transportation, there are railroad tank cars, truck loading, and unloading facilities at different areas of the refinery used for efficient movement of transportation fuels, lube oil feed stock and petrochemicals. Viney Branch transfer racks are provided with a Vapor Recovery Unit (VRU) to absorb volatile organic compounds (VOC) in the activated carbon during loading operation. Activated carbon is regenerated by vacuum by using vacuum pump and the vapor is condensed to recover the hydrocarbon liquid. The vapor recovery system has an absorption and regeneration cycle. VOCs are controlled during solvent loading in the trucks and rail cars by use of the Vapor Destruction Unit (VDU) to reduce the air emissions.

The light gases produced during the processing of the crude oil are used by the refinery sweet fuel gas system after being treated with amines. The refinery fuel gas is used for process heaters, steam generating boilers, flares and incinerators. Amines are regenerated for recycling. Amine regenerator off-gas along with foul water stripper off-gas from the wastewater treatment area, are directed to the sulfur plant. The sulfur plant produces metallic sulfur in the Claus reactors and reduces the sulfur dioxide (SO₂) emission from refinery. Some of the heaters and boilers at the refinery are provided with low nitrogen oxide (NO₂) burners to reduce NO_x emissions to the ambient air.

The refinery has one Fluidized Catalytic Cracking (FCC) unit, two Catalytic Cracking Reformer (CCR) units, and one HF Alkylation unit to produce and improve the Research (RON) and Motor (MON) octane, for the three grades of gasoline distributed in the pumps. The CRLLC has a Lube Oil Complex to produce Lube Feed stock. Lube crude is processed in the #5 crude unit, and the lube vacuum unit makes the 100N and 325N waxy distillate. Waxy distillates are further treated in the Furfural Extraction unit and MEK De-waxing units to produce salable lube feedstock.

The CRLLC also manufactures petrochemicals such as cumene, solvents and other products to be further processed in the chemical industry. Some of the aromatics are also produced in the petrochemical area such as benzene, toluene, xylene, and naphthalene. The refinery brings in Coal Tar Light Oil (CTLO) from the coal industry to meet the demand of benzene in the manufacture of cumene. Light liquid from the reformers and distilled liquids from the CTLO are separated in the Sulfolane Unit liquid-liquid extraction process to produce benzene, toluene and xylene.

The refinery has two independent waste water systems: Oily water sewer system and NESHAP regulated waste water system. The NESHAP water is being collected in collection pits through out the refinery process units and pumped to a storage tank. Water from the storage tank, before going to the common treatment facility, is being treated in the Benzene Recovery Unit (BRU).

Air Products and Chemicals, Inc. which owns and operates a hydrogen generation unit at the Catlettsburg refinery to provide hydrogen and steam to the refinery, has submitted a separate Title V permit application on February 1, 2007. The application is now being reviewed. Therefore all the reference regarding the hydrogen generation unit has been omitted from the initial Title V permit of the refinery.

PUBLIC AND AFFECTED STATE REVIEW:

On January 28, 2007, the public notice on availability of the draft permit and supporting material for comments by persons affected by the plant was published in *The Daily Independent* in Ashland, Kentucky. The public comment period expired on February 27, 2007, 30 days from the date of publication.

Comments received

Comments were received from Marathon Petroleum Company LLC/Catlettsburg Refining, LLC on February 27, 2007. Changes were made to the permit as a result of the comments received. Response to comments is attached in Attachment A. The Division however has concluded that the proposed operation will comply with all air quality regulations and requirements. Therefore, the Division has made a final determination to issue a proposed permit. The proposed permit will become final upon approval of the EPA in 45 days.